National Institute of Environmental Health Sciences

Extreme temperatures and emergency department admissions for childhood asthma in Brisbane, Australia

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Abstract:

Objectives To examine the effect of extreme temperatures on emergency department admissions (EDAs) for childhood asthma. Methods An ecological design was used in this study. A Poisson linear regression model combined with a distributed lag non-linear model was used to quantify the effect of temperature on EDAs for asthma among children aged 0-14 years in Brisbane, Australia, during January 2003-December 2009, while controlling for air pollution, relative humidity, day of the week, season and long-term trends. The model residuals were checked to identify whether there was an added effect due to heat waves or cold spells. Results There were 13 324 EDAs for childhood asthma during the study period. Both hot and cold temperatures were associated with increases in EDAs for childhood asthma, and their effects both appeared to be acute. An added effect of heat waves on EDAs for childhood asthma was observed, but no added effect of cold spells was found. Male children and children aged 0-4 years were most vulnerable to heat effects, while children aged 10-14 years were most vulnerable to cold effects. Conclusions Both hot and cold temperatures seemed to affect EDAs for childhood asthma. As climate change continues, children aged 0-4 years are at particular risk for asthma.

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Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Health Professional

Exposure : ☑

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Cold, Extreme Heat

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Respiratory Effect

Respiratory Effect: Asthma

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content